(12)   EUROPEAN PATENT APPLICATION

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(54)   Human sweat malodor counteractant composition and process for using same

(57)   Described is a process for counteracting human sweat malodor comprising the steps of (i) using as an additive to a base perfume composition a malodor counteractant composition comprising at least one of the following active ingredients:

beta-naphthyl methyl ether,
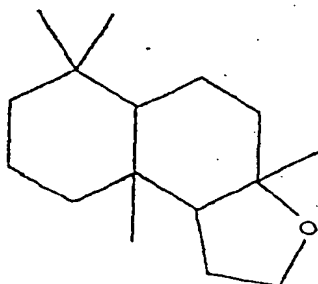methyl beta-naphthyl ketone;
benzyl acetone;
a mixture of hexahydro-4,7-melhanoinden-5-yl propionate and hexahydro-4,7-methanoinden-6-yl propionate;
gamma-methyl ionone;
geranonitrile (3,7-dimethyl-2,6-octadien-1-nitrile);
dodecahydro-3a,6,6,9a-tebamethylnaphtho(2,1-b)furan having the structure:

the ethylene glycol cyclic ester of n-dodecanedioic acid having the structure:
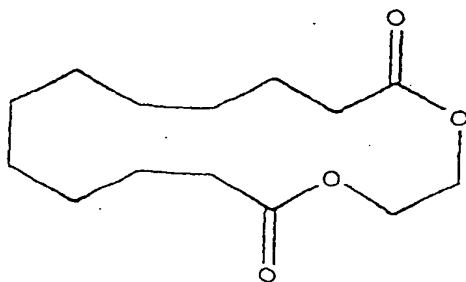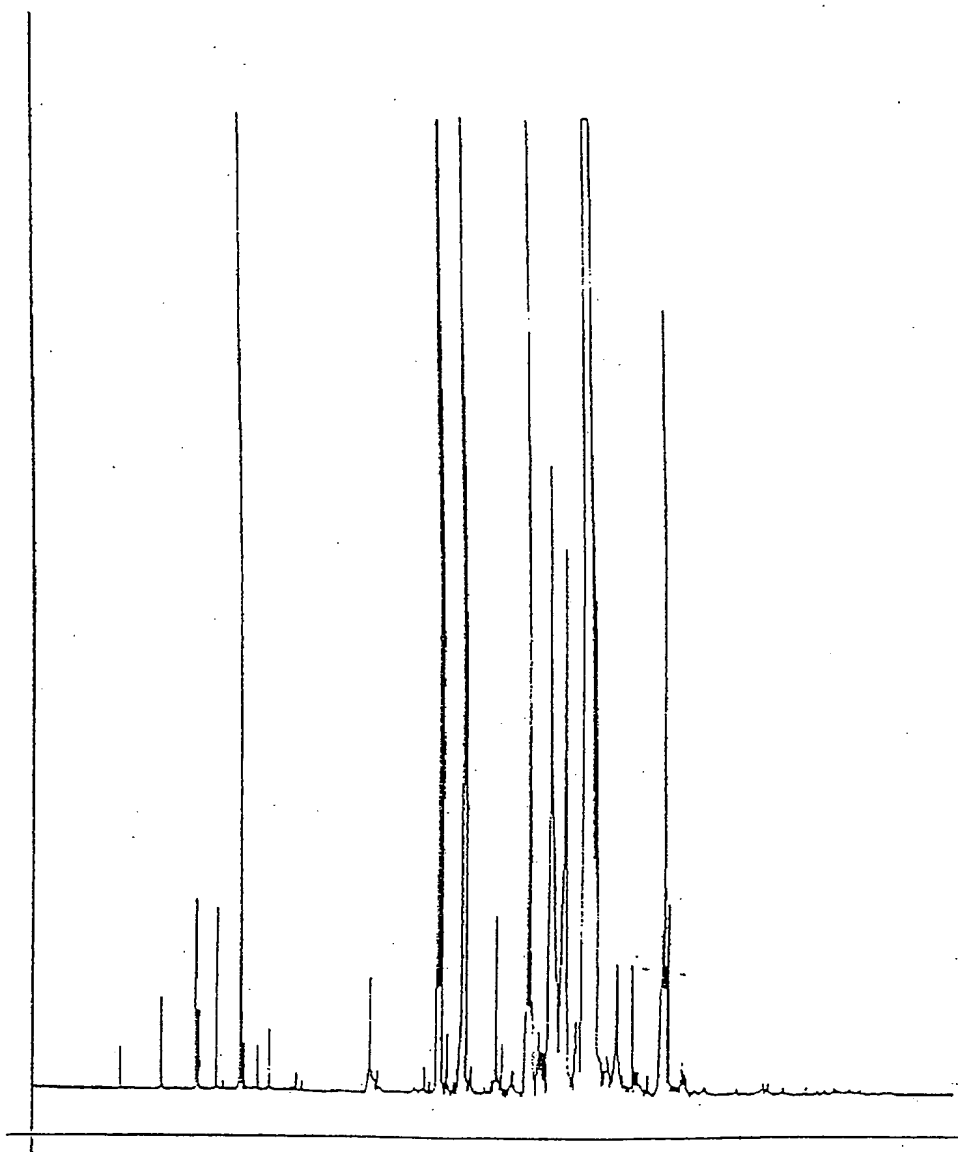
EP 1 113 105 A2

FIG.1

Description

BACKGROUND OF THE INVENTION

[0001]   Our invention covers technology for the creation and quantitative performance testing of substances useful as fragrance ingredients and combinations of such substances that have human sweat malodor neutralizing capacity.

[0002]   The prior art contains a number of attempts at malodor coverage. The malodor coverage achieved by our invention is unobvious, unexpected and advantageous over the prior art which is set forth below.

[0003]   Thus, Barr, et al, I, U.S. Patent No. 5,354,737 issued on October 11, 1994 discloses a fragrance composition said to have enhanced efficacy for masking malodor for extended periods of time, the fragrance composition containing fragrance materials that provide a topnote and/or a middle note and/or a bottom note and also containing more than 28% and up to 95% by weight of the total weight of the composition of acetyl hexamethyl tetralin. Barr, et al, I states that the fragrance composition can be incorporated in deodorant compositions to be applied to a person's skin, e.g., in axillary regions, to combat body malodor including malodor arising in axillary regions. A similar disclosure is set forth in U.S. Letters Patent No. 5,380,707 issued on January 10, 1995 (Barr, et al, II).

[0004]   Pola Chem Industries, Japan Published Application No. JP 7133490 discloses a long-lasting deodorant with malodor masking effect comprising a perfume composition containing, for example, carvone, pulegone, menthol, menthone, cineole, camphor and methyl salicylate and is abstracted in *DERWENT CHEMICAL PATENTS INDEX ALERTING ABSTRACTS BULLETIN,* COUNTRY ORDER, Week 9530, issued August 25, 1995 as follows:

*POKK   D22   95-227308/30   *JP 7133490-A

Long-lasting deodorant with malodour masking effect - comprises perfume compsn. contg. e.g. carvone, pulegone, menthol, menthone, cineole, camphor and methyl salicylate

POLA CHEM IND INC 93.11.10 93JP-305850

E19 P34 (D23) (95.05.23) C11B 9/00, A61K 7/46, A61L 9/01

Deodorant contains 10-90 (pref. 30-60) wt.% of a perfume compsn. consisting of at least one of carvone of formula (I), pulegone of formula (II), menthone of formula (III), menthol of formula (IV), borneol of formula (V), camphor of formula (VI), cineole of formula (VII), methyl salicylate of formula (VIII), thymol of formula (IX), carvacrol of formula (X), bornyl acetate of formula (XI), anethole of formula (XII) and camphene of formula (XIII).

ADVANTAGE - The deodorant has good malodour masking effect for a long periods. Also, the compsn. has sensorial deodorising effect. (7pp Dwg.No.0/0)
C95-125013

(I)   (II)   (III)

(IV)   (V)   (VI)

(VIII)   (IX)   (VII)
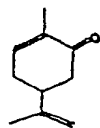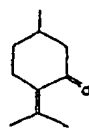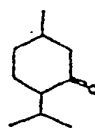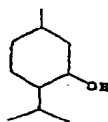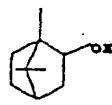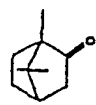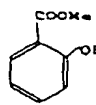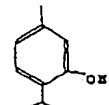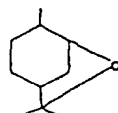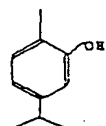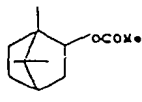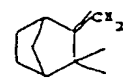
(X)   (XI)   (XII)   (XIII)

[0005] Pola Chem Industries Inc., Japanese Published Application No. JP 103964, covering selection of masking perfume based on theorization of masking by representing odorant for masking and similar odorant in making perfume separately as vectors and selective perfume(s) as indexes is abstracted as follows:

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*POKK          D21          95-188003/25          *JP 7103964-A
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Selection of masking perfume, based on theorisation of masking -
by representing odorant for masking and similar odorant in making
perfume separately as vectors and selective perfume(s) as indexes
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     POLA CHEM IND INC 93.10.04 93JP-248350
     S03 (D13) (95.04.21) G01N 33/00, A61K 7/46
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New selection comprises representing an odorant to be masked and
an odorant similar to the odorant to be masked in a masking perfume
separately as vectors and selecting a suitable perfume(s) with the
similarity and the ratio of the magnitude of the two vectors as indexes.

ADVANTAGE - The method permits easy selection of appropriate
masking perfumes to facilitate prepn. of cosmetic materials and
processed foods. (10pp Dwg.No.0/0)
C95-087215

Toppan Printing Company Limited, Japanese Published Application No. JP 7136239, discloses a deodorant containing
benzoquinone derivatives in ultra small amounts for deodorizing malodors such as mercaptans and is abstracted in
DERWENT CHEMICAL PATENTS INDEX ALERTING ABSTRACTS BULLETIN, COUNTRY ORDER, Week 9530, is-
sued August 25, 1995 as follows:

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*TOPP          D22          95-227448/30          *JP 7136239-A
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Deodorant contg. benzoquinone deriv. - in ultra small amt. for de-
odorising e.g. mercaptan, for utilisation in various forms
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     TOPPAN PRINTING CO LTD 93.09.24 93JP-237685
     E14 P34 (95.05.30) A61L 9/01
     93.12.14 93JP-313113
```
Addnl.Data: DAINIPPON JOCHUGIKU KK   (DAAE)
Deodorant contains benzoquinone deriv(s). of formula (1). R1, R2
and R3 = H, 1-4C lower alkyl, 1-3C lower alkoxy, halo or trifluo-
romethyl, provided at least one is not H.
ADVANTAGE - The deodorants exert high detergency against
various bad-smelling odorants, including mercaptans, in a very small
amt. and allows use in various forms. (4pp Dwg.No.0/0)
C95-104573
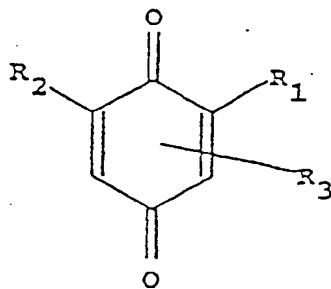
[0006]   Joulain, et al, U.S. Letters Patent No. 4,840,792 issued on June 20, 1989, entitled "AGENT NEUTRALIZING
BAD SMELLS FROM EXCRETIONS AND EXCREMENTS OF ANIMALS", discloses and claims "a method for neu-
tralizing disagreeable odors from animal excretions and excrement, comprising the steps of applying to a surface
having a significant odor from animal excretions or excrement an agent including a compound selected from the group
consisting of C_{10} to C_{12} aliphatic alcohols, C_{10} to C_{13} aldehydes, C_{13} to C_{18} aliphatic ketones, aromatic ketones having
a musk odor and up to 18 carbon atoms, C_8 to C_{15} aliphatic esters, methyl anthranilate, methyl N-methylanthranilate,
p-cresyl phenylacetate, amyl salicylate, coumarin, dihydrocoumarin, gammadecalactone, dodecalactone, undecalac-
tone, eugenol, isoeugenol, diphenyl oxide, the methyl and ethyl ethers of naphthol, GALAXOLIDE® , indole and its
reaction products with hydroxycitronella, tridecene-2-nitrile, and 2-(2'-methyl-pent-2'enyl)-5-methyl pyridine, in an

amount effective to neutralize disagreeable odors from said excretions or excrement, said agent having a vapor tension of less than or equal to 4 Pa at 25°C."

[0007] Kaiser, et al, U.S. Letters Patent No. 5,919,440 issued on July 6, 1999 discloses personal care compositions comprising (a) from about 0.1% up to about 99.85% by weight of a malodor-producing liquid carrier and/or polymer and (b) an odor-masking base comprising 15-75% of an ionone perfume and 5-65% of a musk perfume.

[0008] Schreck, et al, U.S. Letters Patent No. 5,683,979 issued on November 4, 1997 discloses a process for counteracting various malodors using as a maskant composition 20-60% of a musk perfumant, 1-20% of a mint substance, e.g., corn mint oil, and 30-70% of a citrus perfumant, e.g., citral.

[0009] Hooper, et al, U.S. Letters Patent No. 4,304,679 issued on December 8, 1981 discloses a deodorant detergent product comprising a non-soap detergent active compound and a deodorant composition which may contain three or four members of the following classes of compounds:

(i) phenolic substances;
(ii) essential oils;
(iii) aldehydes and ketones;
(iv) polycyclic compounds;
(v) esters; and
(vi) alcohols.

[0010] Nothing in the prior art, however, discloses the unobvious, unexpected and advantageous human sweat malodor coverage results that we have achieved as a result of the use of the formation defined according to the claims appended hereto.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] Figure 1 is a GLC profile for the corn mint oil used in a preferred embodiment of our invention (conditions: 15 meter CARBOWAX® 20M column programmed from 70-220°C at 4°C per minute).

[0012] Figure 2 is another GLC profile of the corn mint oil used in a preferred embodiment of our invention (conditions: 50 meter OV-1, dual fused silica system programmed from 70-220°C at 4°C per minute).

THE INVENTION

[0013] Our invention is directed to a highly substantive human sweat malodor counteractant composition and process of using same.

[0014] The malodor maskant composition of our invention contains:

(a) from about 0 weight percent up to about 10 weight percent of β-naphthyl methyl ether;

(b) from about 0 weight percent up to about 6 weight percent of methyl β-naphthyl ketone;

(c) from about 0 weight percent up to about 40 weight percent of benzyl acetone;

(d) from about 0 weight percent up to about 35 weight percent of a mixture of hexahydro-4,7-methanoinden-5-yl propionate and
hexahydro-4,7-methanoinden-6-yl propionate (hereinafter also termed: CYCLAPROP™ (trademark of International Flavors & Fragrances Inc., New York, New York));

(e) from about 0 weight percent up to about 20 weight percent of γ-methyl ionone [4-(2,6,6-trimethyl-2-cyclohexen-1-yl)-3-methyl-3-buten-2-one];

(f) from about 10 weight percent up to about 100% by weight of 3,7-dimethyl-2,6-octadien-1-nitrile (hereinafter termed CITRALVA®, registered trademark of International Flavors & Fragrances Inc.);

(g) from about 0 up to about 50 weight percent of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan having the structure:
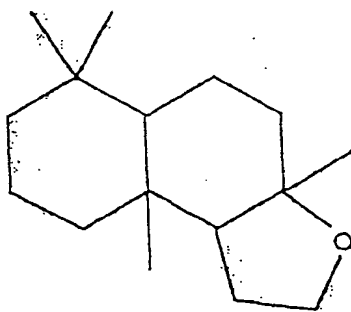
(hereinafter also termed AMBERIFF™ (trademark of International Flavors & Fragrances Inc.);

(h) from 0 up to about 50 weight percent of the ethylene glycol cyclic ester of n-docecanedioic acid having the structure:
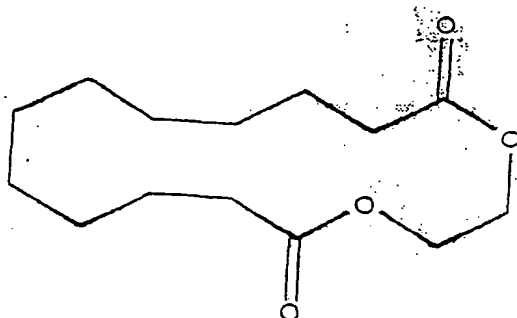
(i) from 0 up to about 10% by weight of 1-cyclohexadecen-6-one having the structure:
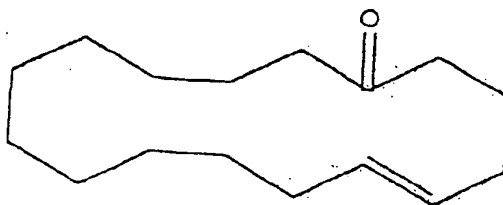
and/or 1-cycloheptadecene-10-one having the structure:
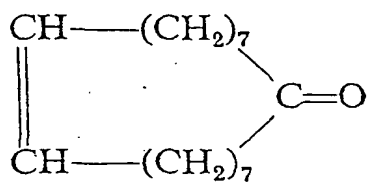
$$CH \underset{\parallel}{\overset{}{}} (CH_2)_7 \atop CH (CH_2)_7} C = O \quad ; \text{ and}$$

(j) from 0 up to about 35% by weight of corn mint oil defined according to the GLC profiles of one of Figures 1 or 2.

[0015] The following subcombinations covered by the aforementioned composition are preferred subcombinations of our invention:

(i)

(a) from 5 up to 10 weight percent of β-naphthyl methyl ether;
(b) from 3 up to 6 weight percent of β-naphthyl methyl ketone;
(c) from 20 up to 40 weight percent of benzyl acetone;
(d) from 5 up to 20 weight percent of γ-methyl ionone;
(e) from 15 up to 35 weight percent of a mixture of hexahydro-4,7-methanoinden-5-yl propionate and hexahydro-4,7-methanoinden-6-yl propionate (in a weight ratio of 50:50); and
(f) from 10 up to 40 weight percent of 3,7-dimethyl-2,6-octadien-1-nitrile;

(ii) from about 10 up to about 90% by weight of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan and from about 10 up to about 90% by weight of 3,7-dimethyl-2,6-octadien-1-nitrile;

(iii)

(a) from 5 up to 10 weight percent of β-naphthyl methyl ether;
(b) from 3 up to 6 weight percent of β-naphthyl methyl ketone;
(c) from 20 up to 40 weight percent of benzyl acetone;
(d) from 5 up to 20 weight percent of γ-methyl ionone;
(e) from 15 up to 35 weight percent of a mixture of hexahydro-4,7-methanoinden-5-yl propionate and hexahydro-4,7-methanoinden-6-yl propionate;
(f) from 10 up to 40 weight percent of 3,7-dimethyl-2,6-octadien-1-nitrile; and
(g) from 10 up to 40 weight percent of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan.

(iv) from about 10 up to about 90% by weight of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan; from about 20 up to 40% by weight of benzyl acetone; and from about 10 up to about 50% by weight of 3,7-dimethyl-2,6-octadien-1-nitrite;

(v)

(a) from about 0.5 up to about 5% by weight of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan;
(b) from about 20 up to about 60% by weight of 3,7-dimethyl-2,6-octadien-1-nitrite;
(c) from about 5 up to about 30% by weight of corn mint oil defined according to the GLC profiles of one of Figures 1 or 2;
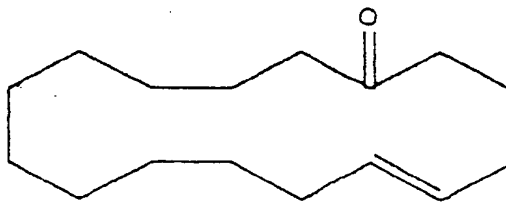(d) from about 1% up to about 10% by weight of 1-cycloheptadecen-10-one having the structure:

or
(e) from about 20 up to about 40% by weight of the ethylene glycol cyclic ester of n-dodecanedioic acid having the structure:

5

10
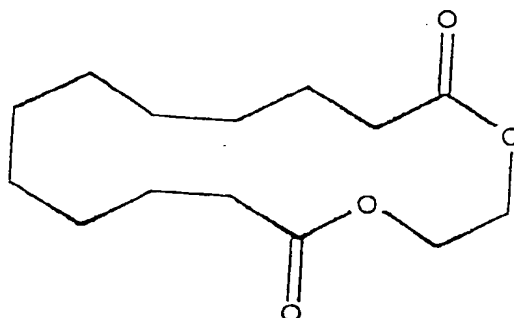
[0016] The process of our invention for neutralizing human sweat malodor emanating from (A) the human epidermis and/or (B) a fabric article comprises the steps of:

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    (i) admixing one of the above-mentioned malodor maskant compositions with a compatible perfume formulation to form a fragranced malodor maskant composition; and then

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    (ii) applying the resulting composition to, in the alternative:

        (a) a fabric article which evolves a human sweat malodor into the environment surrounding the fabric article; or
        (b) a defined surface area of the human epidermis (e.g., an axillary area such as underarm) which evolves into the environment proximate said surface area a human sweat malodor

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in a sweat malodor-reducing quantity, concentration and at a sweat malodor-reducing mass rate whereby the sweat malodor thereof is substantially totally masked.

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[0017] Malodor neutralization is evaluated by placing a specified amount of malodor into an uncapped, 1 ounce wide-mouth jar. This jar is placed into an 8 ounce wide-mouth jar containing a specified amount of test material or finished fragrance. The quantities of malodor and fragrance are dependent on the specific malodor model used. The 8 ounce jar is capped and allowed to equilibrate. The panelists then rate the headspace for (1) total intensity, (2) malodor intensity and (3) overall like/dislike (hedonics). They are provided with an identified sample of malodor as a reference. Each group of samples presented to the panel contains an unidentified positive control (a fragrance material with no

35
malodor), two unidentified negative controls (malodor with no fragrance) and up to twelve test samples (each fragrance is presented in duplicate or triplicate).
[0018] It is to be noted that evaluations are carried out by panelists who have been extensively screened for their olfactory acuity and trained in the method of evaluation (Magnitude Estimation). Panelist performance is constantly monitored and reviewed.

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[0019] All samples are coded with random 5-digit numbers. Panelists are instructed to select samples from the test set and evaluate them in a random order.
[0020] The results of these experiments are expressed in terms of malodor reduction (neutralization), change in overall intensity and improvement in hedonics.
[0021] The percent malodor reduction is calculated as:

45

% Reduction = 100 x [1-(malodor intensity/total intensity)]

or shown thusly:

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$$\%R_{MOL} = 100\left\{1 - \frac{i_{MO}}{i_T}\right\}$$

wherein wherein R_{MOL} represents malodor reduction; i_{MO} is malodor intensity; and i_T represents total intensity.

[0022] The positive control is normally rated as providing approximately a 95% malodor reduction; the negative control is less than 10%.

[0023] One of the important attributes of the formulations of our invention is that their efficacy should not be achieved by "overpowering" the malodor but by "blending" with it. In order to substantiate this attribute, the total intensity of the "fragrance + malodor" sample cannot be statistically more intense than the "malodor" sample alone. Also, there must be a statistically significant improvement in the perceived pleasantness (hedonics).

[0024] The technology which we have developed as exemplified below and as set forth, supra, is based upon a fragrance composition's ability to blend with a specific malodor in such a fashion as to be quantified and documented. In addition to having the appropriate aesthetic appeal, these fragrances must also meet the following technical criteria:

1. significant reduction in perceived malodor when compared to appropriate control fragrances;

2. no significant increase in overall intensity when the fragrance is combined with malodor; and

3. significant increase in the level of perceived pleasantness.

[0025] The following table sets forth percents (%) human sweat malodor coverage (calculated according to the above-mentioned protocol) and substantivity for several of the human sweat malodor formulation ingredients of our invention:

Substance	% Human Sweat Malodor Coverage	Substantivity (Time [Hours])
CYCLAPROP™	91% reduction	24 hours
Benzyl acetone	96% reduction	24 hours
CITRALVA®	98% reduction	24 hours
β-Naphthyl methyl ether	92% reduction	24 hours
γ-Methyl ionone	93% reduction	24 hours
Methyl β-naphthalene ketone	96% reduction	24 hours

[0026] The following examples are intended to indicate how the invention is to be practiced, but the invention is not to be limited thereto and is only to be limited to the claims as set forth, infra.

EXAMPLE A

FRAGRANCE A: The following fragrance was prepared:

Ingredients	Reference Note	Parts
Amyl Cinn Ald Coeur	1	0.0157
Benz Sal	2	0.0714
Cinn Alc	3	0.0143
CYCLACET® (registered trademark of International Flavors & Fragrances Inc.)	4	0.0071
CYCLAPROP™ (trademark of International Flavors & Fragrances Inc.)	5	0.0071
Dihydro Myrcenol	-	0.0143
Dihydro Terpineol	-	0.0714
Dipropylene Glycol	-	0.1000
GALAXOLIDE® (registered trademark of International Flavors & Fragrances Inc.)	6	0.1429
Hexyl Cinn Ald	7	0.1986
LILIAL® (registered trademark of (Givaudan et Cie)	8	0.1486
LYRAL® (registered trademark of International Flavors & Fragrances Inc.)	9	0.0229
Meth Ionone γ-A	10	0.0286
Phen Eth Acet	11	0.0286
Phen Eth Alc White Extra	12	0.1000
TONALIDE® (registered trademark of Tastemaker Inc.)	13	0.0214
TRIMOFIX "O"® (registered trademark of International Flavors & Fragrances Inc.)	14	0.0071

REFERENCE NOTES FOR FRAGRANCE A

[0027]

1. ∝ Amyl cinnamic aldehyde
2. Benzyl salicylate
3. Cinnamyl alcohol
4. Hexahydro-4,7-methanoinden-5-yl acetate
5. Hexahydro-4,7-methanoinden-5-yl propionate
6. Structures on page 19, infra
7. ∝ Hexylcinnamic aldehyde
8. p-t-butyl-∝-methyl-dihydro cinnamic aldehyde
9. (4-hydroxy-4-methylpentyl)-3-cyclohexene-1-carboxaldehyde
10. γ-Methyl ionone
11. β-Phenyl ethyl acetate
12. β-Phenyl ethyl alcohol
13. 6-Acetyl-1,2,3,4-tetrahydro-1,1,2,4,4,7-hexamethyl naphthalene
14. Methyl-2,6,10-trimethyl-2,5,9-cyclododecatrien-1-yl ketone

EXAMPLE B

[0028] The following two malodor maskant formulations are prepared and called, respectively, DEODIFF® 2000A and DEODIFF® 2000B formulations (trademarks of International Flavors & Fragrances Inc.):

DEODIFF® 2000A

10% β-naphthyl methyl ether;
5% β-naphthyl methyl ketone;

30% benzyl acetone;
10% γ-methyl ionone;
20% CYCLAPROP™ (trademark of International Flavors & Fragrances Inc.); and
25% CITRALVA® (registered trademark of International Flavors & Fragrances Inc.).

DEODIFF® 2000B

1% dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan (20% in isopropyl myristate);
50% CITRALVA® ;
10% corn mint oil having the GLC spectra of Figures 1 and 2; and
35% ethylene glycol cyclic ester of n-dodecanedioic acid.

[0029]   The following protocols are used for cloth substantivity, for malodor and for human sweat malodor neutralization:

CLOTH SUBSTANTIVITY

[0030]

1. Sufficient 3" x 4.5" polyester:cotton fabric test swatches for the complete test are prewashed in an automatic washing machine using approximately 1/2 cup of unperfumed detergent and subsequently dried in an automatic dryer;

2. Usc levels (concentration of fragrance in product base) and dosage levels (amount of fragrance product in wash load) are established appropriately for the fragrance ingredients, finished fragrances or product category to be tested;

3. All samples are processed using a Launder-O-Meter® Model LEF (trademark of Atlas Electric Devices Company, Chicago, Illinois). A 1,200 ml container is charged with 40 grams of prewashed fabric, 750 ml of distilled water and an appropriate amount of a fragranced laundry care product. The samples are agitated with stainless steel balls on the rotor under the standard Launder-O-Meter® protocol for a period of 10 minutes for fabric softener products or 30 minutes for detergent products. The samples are then hand-squeezed to approximately 200% of their original dry weight;

4. In the case of detergent products, the treated fabric samples are rinsed in 750 ml of distilled water and agitated for 10 minutes. The test samples are again hand-squeezed to approximately 200% of their original dry weight. Samples are then hung to dry in a controlled air flow room for a period of 24 hours;

5. The dry samples are then divided into four 10-gram aliquots and placed in 6 oz. wide-mouth jars for a double-blind presentation to the trained panel of magnitude estimation judges; and

6. The odor intensities are quantitatively measured and compared to the appropriate controls and embedded targets in order to rate and rank the level of substantivity.

MALODOR NEUTRALIZING EVALUATIONS - FRAGRANCE INGREDIENTS

[0031]   The following protocol has been developed to determine the level of odor neutralization:

1. A predetermined quantity of the malodor model is measured with a micropipette into an uncapped 1 oz. wide-mouth jar. This jar is subsequently placed into an 8 oz. wide-mouth jar containing a predetermined quantity of the test material. The 8 oz. jar is capped and allowed to equilibrate prior to evaluation;

2. Odor evaluations are completed by judges who have been trained in the use of Magnitude Estimation. They are presented with a fully randomized array of samples, including duplicates of each test product, blanks, positive and negative controls, internal standards and/or relevant commercial targets. Each judge is also presented with an identified sample of the malodor in order to reinforce the malodor discrimination task;

3. Each of the judges rate the headspace for (a) total odor intensity, (b) malodor intensity and (c) the overall like/

dislike (hedonics) of the sample; and

4. In order to meet our efficacy criteria for malodor neutralization, a fragrance or test material must reduce the perception of the unpleasant note and significantly increase the overall pleasantness of the odor without significantly increasing the overall odor intensity.

[0032]   Using the aforementioned protocols, the following sweat malodor neutralization (jar method) and cloth substantivity are obtained for each of DEODIFF® 2000B and DEODIFF® 2000A and Fragrance A:

Substance Tested	Sweat Malodor Neutralization (Jar Method)	Cloth Substantivity
DEODIFF® 2000B	83	+
DEODIFF® 2000A	82	+
Fragrance A	74	+

A "+" in the aforementioned table indicates substantivity of 24 hours.

CONCLUSION

[0033]   The original fragrance of Example A was developed to be aesthetically appropriate for sweat malodor coverage. Although hedonically acceptable, the fragrance is less than adequate for sweat malodor neutralization.
[0034]   DEODIFF® A and DEODIFF® B have unexpected, unobvious and advantageous effects in the field of human sweat malodor coverage.
[0035]   In the present specification "comprise" means "includes or consists of" and "comprising" means "including or consisting of".
[0036]   The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

Claims

1.   A process for neutralizing human sweat malodor emanating from a fabric article comprising the steps of:

(i) admixing a malodor maskant composition consisting essentially of:

(a) from about 0 weight percent up to about 10 weight percent of β-naphthyl methyl ether;

(b) from about 0 weight percent up to about 6 weight percent of methyl β-naphthyl ketone;
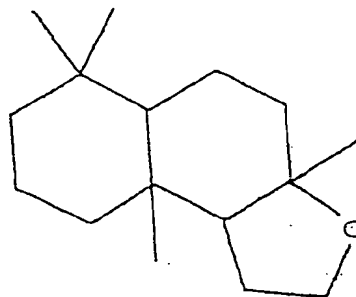
(c) from about 0 weight percent up to about 40 weight percent of benzyl acetone;

(d) from about 0 weight percent up to about 35 weight percent of a 50:50 weight:weight mixture of hexahydro-4,7-methanoinden-5-yl propionate and hexahydro-4,7-methanoinden-6-yl propionate;
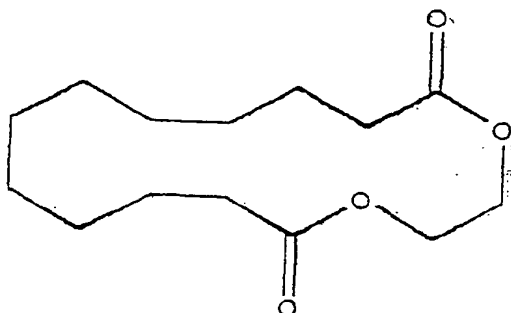
(e) from about 0 weight percent up to about 20 weight percent of γ-methyl ionone;

(f) from about 10 weight percent up to about 100% by weight of 3,7-dimethyl-2,6octadien-1-nitrile;
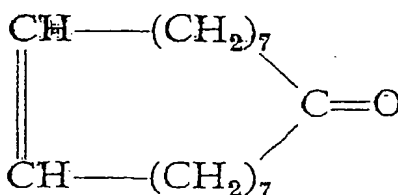
(g) from 0 up to about 50 weight percent of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan having the structure:

(h) from 0 up to about 50 weight percent of the ethylene glycol cyclic ester of n-dodecanedioic acid having the structure:

(i) from 0 up to about 10% by weight of 1-cyclohexadecen-6-one and/or 1-cycloheptadecen-10-one having the structure:

$$CH\text{---}(CH_2)_7$$
$$\|\qquad\qquad\searrow$$
$$\qquad\qquad\qquad C{=}O$$
$$\|\qquad\qquad\nearrow$$
$$CH\text{---}(CH_2)_7$$

(j) from 0 up to about 35% by weight of corn mint oil defined according to the GLC profiles of one of Figures 1 or 2,

with a compatible perfume formulation to form a fragranced malodor maskant composition; and

(ii) applying the resulting composition to a fabric article which evolves into the environment surrounding said fabric article a human sweat malodor, in a sweat malodor-reducing quantity, concentration and at a sweat malodor-reducing mass rate whereby the sweat malodor thereof is substantially totally masked.

2.   The process of Claim 1 wherein the malodor maskant composition contains:

(a) from 5 up to 10 weight percent of β-naphthyl methyl ether;

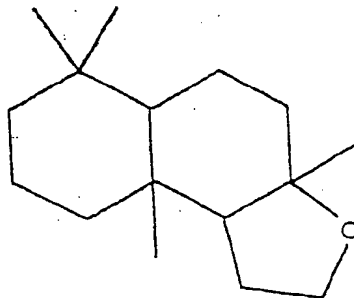(b) from 3 up to 6 weight percent of β-naphthyl methyl ketone;

(c) from 20 up to 40 weight percent of benzyl acetone;

(d) from 5 up to 20 weight percent of γ-methyl ionone;

(e) from 15 up to 35 weight percent of a 50:50 mixture of hexahydro-4,7-methanoinden-5-yl propionate and hexahydro-4,7-methanoinden-6-yl propionate; and

(f) from 10 up to 40 weight percent of 3,7-dimethyl-2,6-octadien-1-nitrile.

3.   A process for neutralizing human sweat malodor emanating from a fabric article comprising the steps of:

   (i) admixing a malodor maskant composition consisting essentially of:

      (a) from 5 up to 10 weight percent of β-naphthyl methyl ether;

      (b) from 3 up to 6 weight percent of methyl β-naphthyl ketone;

      (c) from 20 up to 40 weight percent of benzyl acetone;

      (d) from about 0 weight percent up to about 35 weight percent of a 50:50 mixture of hexahydro-4,7-methanoinden-5-yl propionate and hexahydro-4,7methanoinden-6-yl propionate;

      (e) from about 0 weight percent up to about 20 weight percent of γ-methyl ionone;

      (f) from 10 weight percent up to 90% by weight of 3,7-dimethyl-2,6-octadien-1-nitrile; and

      (g) from 0 up to about 50 weight percent of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan having the structure:

with a compatible perfume formulation to form a fragranced malodor maskant composition; and

   (ii) applying the resulting composition to a fabric article which evolves into the environment surrounding said fabric article a human sweat malodor, in a sweat malodor-reducing quantity, concentration and at a sweat malodor-reducing mass rate whereby the sweat malodor thereof is substantially totally masked.

4.   The process of Claim 3 wherein the malodor maskant composition contains:

      (a) from 5 up to 10 weight percent of β-naphthyl methyl ether;

      (b) from 3 up to 6 weight percent of β-naphthyl methyl ketone;

      (c) from 20 up to 40 weight percent of benzyl acetone;   ·

      (d) from 5 up to 20 weight percent of γ-methyl ionone;

      (e) from 15 up to 35 weight percent of a 50:50 mixture of hexahydro-4,7-methanoinden-5-yl propionate and hexahydro-4,7methanoinden-6-yl propionate;

(f) from 10 up to 40 weight percent of 3,7-dimethyl-2,6-octadien-1-nitrile; and

(g) from 10 up to 40 weight percent of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan.

5. The process of Claim 1 wherein the malodor maskant composition contains from about 10 up to about 90% by weight of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan; from about 20 up to about 40% by weight of benzyl acetone; and from about 10 up to about 90 weight percent of 3,7-dimethyl-2,6-octadien-1-nitrile.

6. A composition of matter consisting essentially of from about 10 up to about 90% by weight of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan; from about 20 up to about 40 weight percent of benzyl acetone; and from about 10 up to about 90% by weight of 3,7-dimethyl-2,6-octadien-1-nitrile.

7. A malodor maskant composition comprising:

(a) from about 0 weight percent up to about 10 weight percent of β-naphthyl methyl ether;

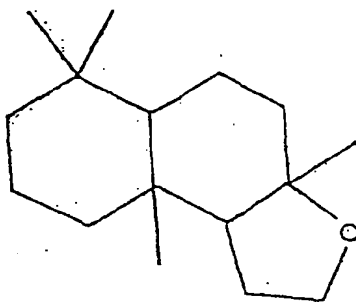(b) from about 0 weight percent up to about 6 weight percent of methyl β-naphthyl ketone;

(c) from about 0 weight percent up to about 40 weight percent of benzyl acetone;

(d) from about 0 weight percent up to about 35 weight percent of a 50:50 weight:weight mixture of hexahydro-4,7-methanoinden-5-yl propionate and hexahydro-4,7-methanoinden-6-yl propionate;
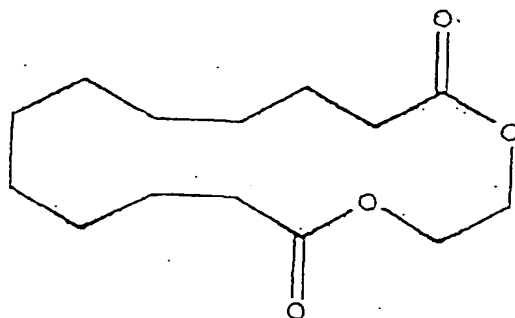
(e) from about 0 weight percent up to about 20 weight percent of γ-methyl ionone;

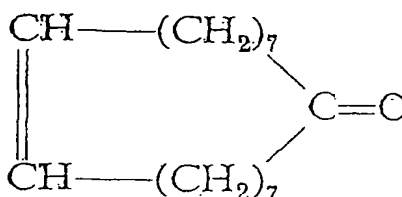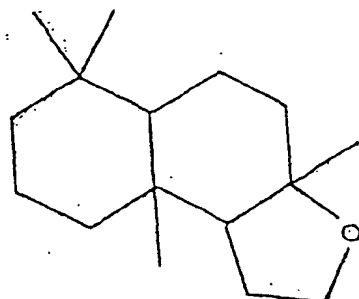(f) from about 10 weight percent up to about 100% by weight of 3,7-dimethyl-2,6-octadien-1-nitrile;

(g) from 0 up to about 50 weight percent of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan having the structure:

;

(h) from 0 up to about 50 weight percent of the ethylene glycol cyclic ester of n-dodecanedioic acid having the structure:

(i) from 0 up to about 10% by weight of 1-cyclohexadecen-6-one and/or 1-cycloheptadecen-10-one having file structure:

(j) from 0 up to about 35% by weight of corn mint oil defined according to die GLC profiles of one of Figures 1 or 2.

8. The malodor maskant composition of Claim 7 further comprising a fragrance composition.

9. A method of making a malodor maskant composition comprising the steps of admixing:

(a) from about 0 weight percent up to about 10 weight percent of β-naphthyl methyl ether;

(b) from about 0 weight percent up to about 6 weight percent of methyl β-naphthyl ketone;

(c) from about 0 weight percent up to about 40 weight percent of benzyl acetone;

(d) from about 0 weight percent up to about 35 weight percent of a 50:50 weight:weight mixture of hexahydro-4,7-methanoinden-5-yl propionate and hexahydro-4,7-methanoinden-6-yl propionate;
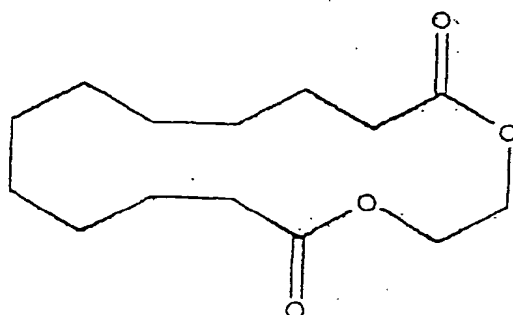
(e) from about 0 weight percent up to about 20 weight percent of γ-methyl ionone;

(f) from about 10 weight percent up to about 100% by weight of 3,7-dimethyl-2,6-octadien-1-nitrile;
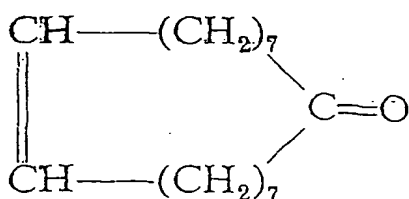
(g) from 0 up to about 50 weight percent of dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan having the structure:

(h) from 0 up to about 50 weight percent of the ethylene glycol cyclic ester of n-dodecanedioic acid having the structure:
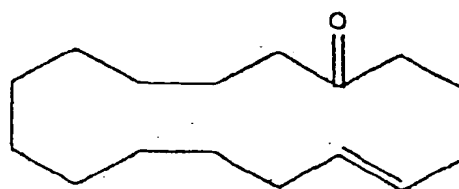

(i) from 0 up to about 10% by weight of 1-cyclohexadecen-6-one and/or 1-cycloheptadecen-10-one having the structure:
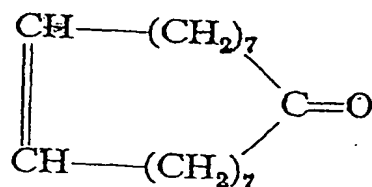

(j) from 0 up to about 35% by weight of corn mint oil defined according to the GLC profiles of one of Figures 1 or 2.

10. The method of Claim 9 further comprising the step of admixing a fragrance composition. 1-cyclohexadecen-6-one having the structure:

and/or

1-cycloheptadecen-10-one having the structure:

$$CH = CH - (CH_2)_7 - C = O - (CH_2)_7$$

;

and
corn mint oil,
and then (ii) applying the resulting composition to, in the alternative, either (a) a fabric article which evolves into the space surrounding it a human sweat malodor or (b) a defined surface area of the human epidermis which evolves into the space above it a human sweat malodor. Also described are novel compositions having human sweat malodor masking properties.
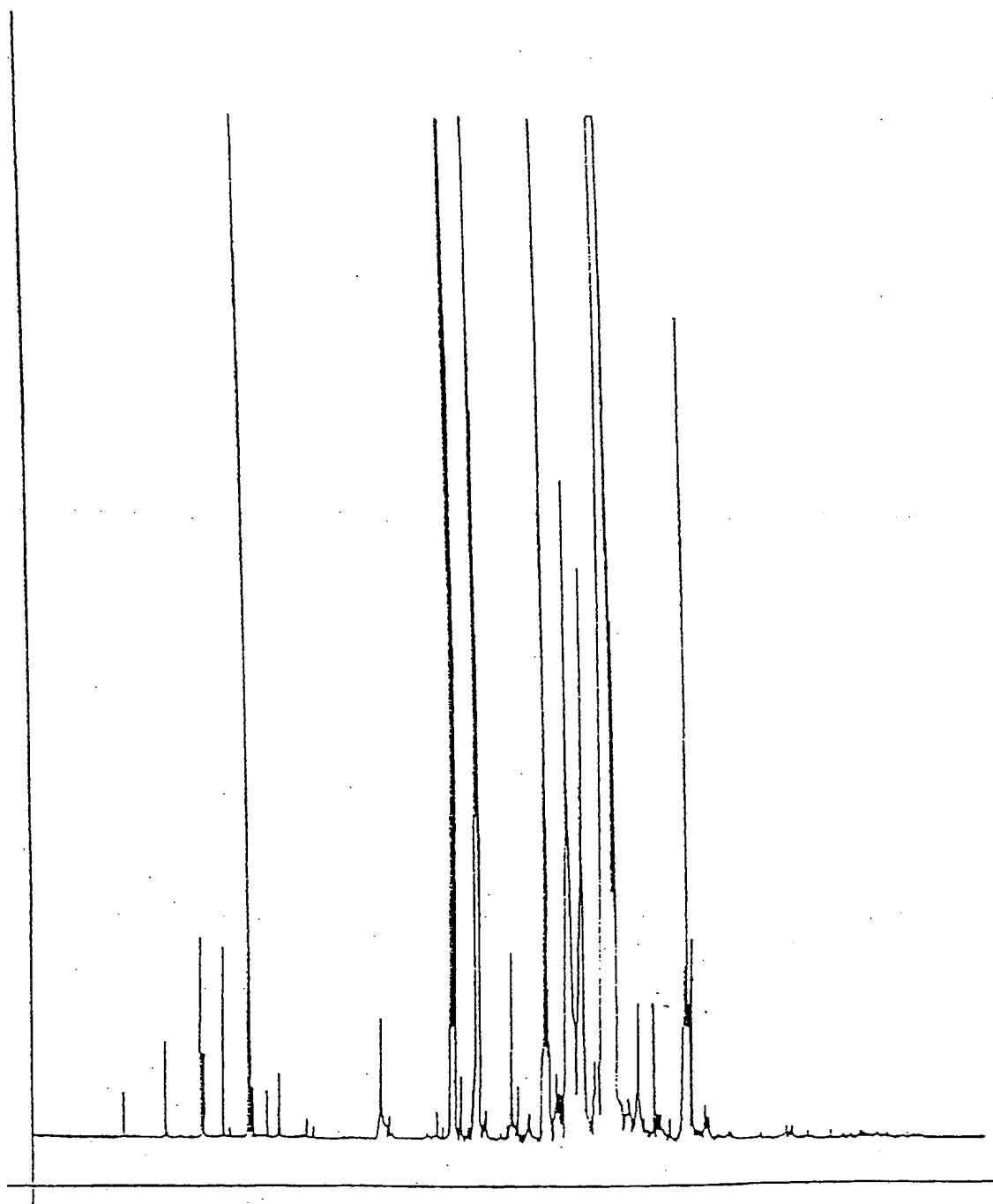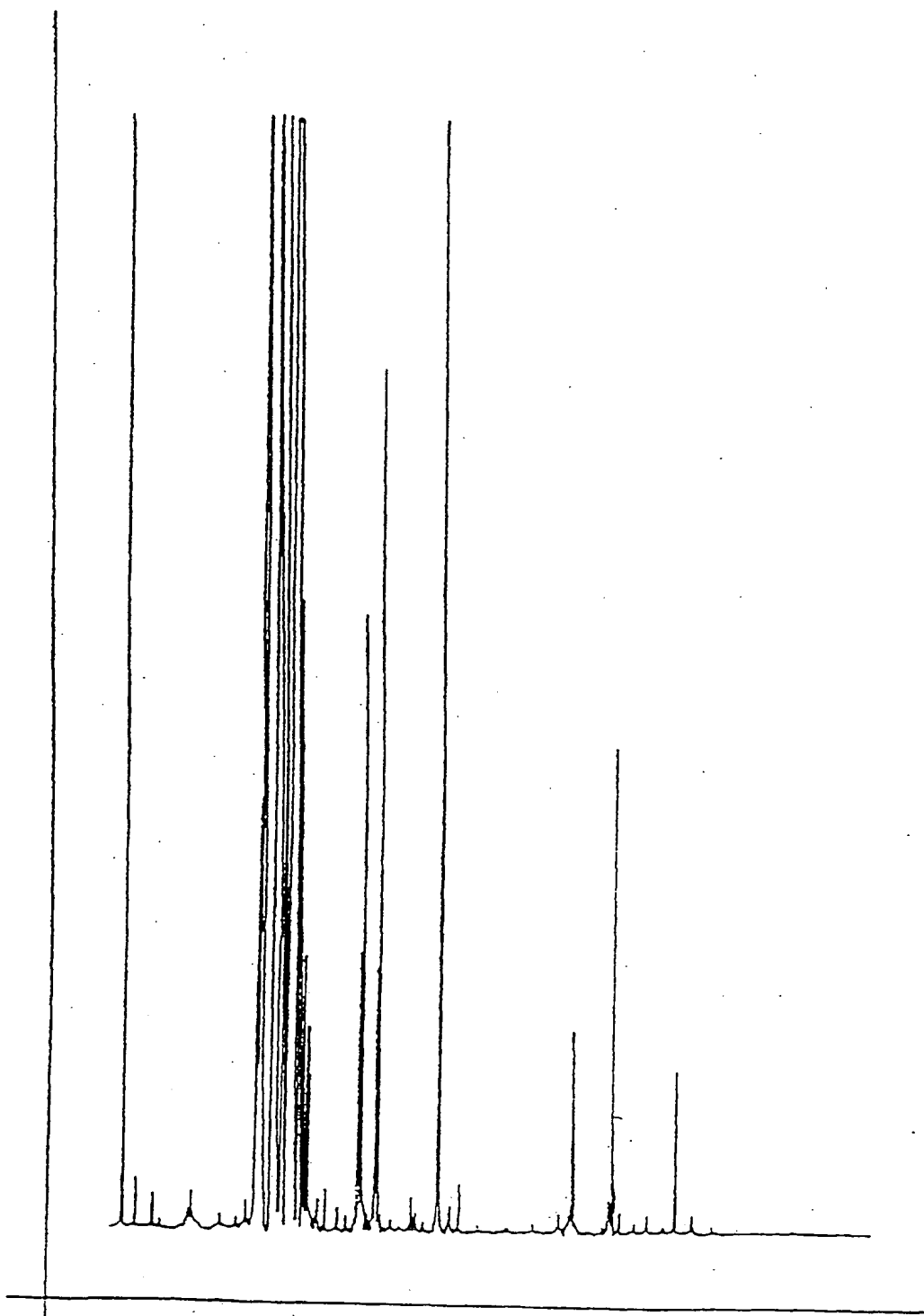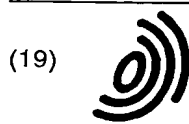
FIG.1

FIG.2

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(54)   **Human sweat malodor counteractant composition and process for using same**

(57)   Described is a process for counteracting human sweat malodor comprising the steps of (i) using as an additive to a base perfume composition a malodor counteractant composition comprising at least one of the following active ingredients:

beta-naphthyl methyl ether;
methyl beta-naphthyl ketone;
benzyl acetone;
a mixture of hexahydro-4,7-methanoinden-5-yl propionate and hexahydro-4,7-methanoinden-6-yl propionate;
gamma-methyl ionone;
geranonitrile (3,7-dimethyl-2,6-octadien-1-nitrile);
dodecahydro-3a,6,6,9a-tetramethylnaphtho(2,1-b)furan having the structure:
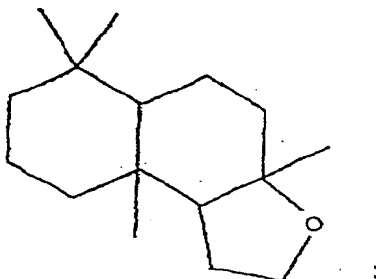
the ethylene glycol cyclic ester of n-dodecanedioic acid having the structure:

;

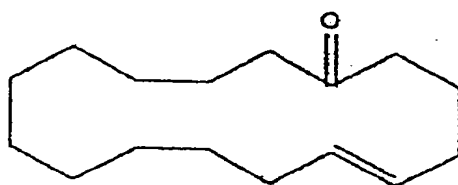1-cyclohexadecen-6-one having the structure:

;

and/or
1-cycloheptadecen-10-one having the structure:

;

and
corn mint oil,
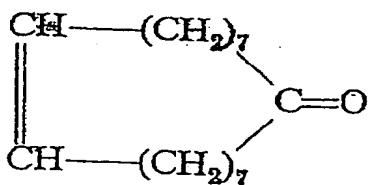
and then (ii) applying the resulting composition to, in the alternative, either (a) a fabric article which evolves into the space surrounding it a human sweat malodor or (b) a defined surface area of the human epidermis which evolves into the space above it a human sweat malodor. Also described are novel compositions having human sweat malodor masking properties.

FIG.1

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Application Number

EP 00 31 1441

DOCUMENTS CONSIDERED TO BE RELEVANT

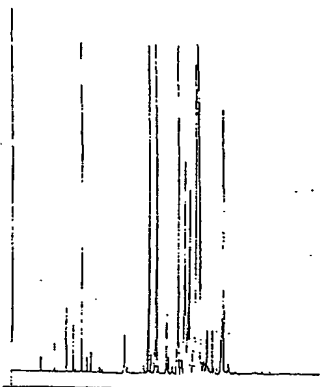| Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	11 December 2002	Giese, H-H

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5